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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,333	11/25/2003	Roderick M. Townes	84712 3050 GNN	3929
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MANELLI DENISON & SELTER 2000 M STREET NW SUITE 700 WASHINGTON, DC 20036-3307			EXAMINER WIEHE, NATHANIEL EDWARD	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,333

Applicant(s)

TOWNES, RODERICK M.

Examiner

Nathan Wiehe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11252003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Great Britain on 28 November 2002. It is noted, however, that applicant has not filed a certified copy of the GB 0227745.7 application as required by 35 U.S.C. 119(b).

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 25 November 2003 is noted. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the controller causing adjustment of the flow deflector through mechanical adjustment (Claim 10) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "8" and "P" have both been used to designate the blade cooling passage.

The examiner suggest that the applicant change reference character "P" in Fig. 1 to "8" since the specification only refers to the passage by the "8" reference character and since "P" is the only alphabetic character used to reference an element in the drawings.

The drawings are objected to because the line associated with reference character "AB" is missing from Fig. 2.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The disclosure is objected to because of the following informalities:

On page 4, line 24, "end 6" should read --end 9--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Although, the Applicant states the deflector's angle of inclination may be adjusted by mechanical linkages (page 6, lines 8-12), the disclosure does not sufficiently describe the use of a flow deflector is mechanically displaced under specific control of a controller. The lack of a figure depicting the controller as claimed as well as the factors of limited space, high rotational speeds, high centrifugal forces and high temperatures associated with such an application further diminishes the ability of one skilled in the art to construct a blade cooling arrangement as claimed.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,3,5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kildea (6,474,946). Kildea discloses a blade cooling arrangement comprising a mounting hub and a blade root (16) forming a cooling gallery (47) there between (See Fig. 6). The blade root (16) includes cooling passages with openings (56). The openings are formed by a plurality of ribs (38) that extend into the cooling gallery (47) thus forming flow deflectors (Kildea column 3, lines 10-14). The deflectors have a curved surface defined by the elliptical section of openings (56). Further, the deflectors provide progressive deflection, through the use of smooth surfaces, of coolant towards the openings, which creates a low loss flow limiting the pressure loss upon entry of the coolant into the opening (Kildea column 3, lines 35-42).

Claims 1,2,3,4,6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Radons (GB 2,225,063 A). Radons discloses a blade cooling arrangement including a mounting hub (7), a blade root (11) and a cooling gallery (10) defined between the mounting hub and blade root. Within the cooling gallery (10) a flow deflector (9) is mounted which extends downwardly from the blade root (11) and upwardly from the mounting hub (7) and is positioned to progressively deflect cooling air toward passages

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(20,12,21) within the blade root (11). The deflector (9) has a wedge/ramp shape and includes curved surfaces near the cooling air inlet portion (8) as well as the upper portions near edges (15). Further, the cooling arrangement of Radons provides low loss flow that includes low pressure loss (Radons page 4, lines 1-7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Radons in view of Hsing (4,626,169). Radons' deflector further seals the cooling gallery (10) separating the cooled air plenum (19) from the rest of the cooling gallery (10). Radons does not disclose the use of thermal expansion and contraction to adjust the flow deflector. Hsing discloses a flow deflector element (66) directing cooling air to passage (54) through opening (78) and also provides a sealing function within the cooling gallery. The deflector (66) includes elements (70,72,82,80) extending downward from the blade root and come into contact with the mounting hub (20). The deflector is formed of a material having a coefficient of expansion greater than the coefficient of expansion of the mounting hub (20) which provides for improved sealing through thermal expansion and constriction of the elements (70,72,82,80) and the mounting hub (20). It would have been obvious to one of ordinary skill in the art at the

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time the invention was made to modify the deflector of Radons by constructing the deflector from a material that would result in differential expansion and contraction relative to the mounting hub as taught by Hsing in order to increase the sealing capabilities of the deflector (Hsing column 6, 37-53).

### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents issued to Balland, Schiavo and Arness disclose various flow deflectors located in a coolant gallery between a mounting hub and a blade root.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Wiehe whose telephone number is (571)272-8648. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan Wiehe  
Examiner  
Art Unit 3745



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2/3/06